

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/517,589

REMARKS

Claims 1-34 are pending in the application. Claims 1, 3, 10-13, 15, 18, 19, 21-32 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto *et al* (U.S. Patent No. 5,452,312) (“Yamamoto”) in view of Sonoda (Japanese Patent No. 10-254001) (“Sonoda”). Claims 2-9, 16, 17, 20 and 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sonoda in view of Yamamoto. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Applicant has added new claim 35 to more fully claim the invention and to submit the following in traversal of the prior art rejections.

Rejection of Claims 1, 3, 10-13, 15, 18, 19, 21-32 and 34 Under § 103(a) Over Yamamoto in view of Sonoda

Applicant submits that claims 1, 3, 19, and 30 are patentable because the Examiner has not established a *prima facie* case of obviousness. In rejecting the claims, the Examiner argues that it would have been obvious to combine the light-wavelength converting device 22 of Fig. 16 with the embodiment shown in Fig. 9. To modify a reference, however, there has to be a reasonable expectation of success. M.P.E.P. 2143.02. In Fig. 9, Yamamoto discloses an optical waveguide 2 disposed in a light-wavelength converting device 22. The light emitted by the semiconductor laser 21 is *narrowly* focused onto the relatively small cross sectional area of the optical waveguide 2. A bulk-type polarization inversion device, however, does not require that the inputted light is as narrowly focused. *See* Col. 14, lines 16-18. Rather, a light gradually converging through the light-wavelength converting device 22 is shown in Fig. 16 to focus the light onto the wavelength selective mirror 61. As previously mentioned in the Amendment of

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March 1, 2004, a narrow beam inputted into a bulk-shaped wavelength conversion crystal diffuses drastically as the beam is propagated and the conversion efficiency decreases. Therefore, there is no reasonable expectation that a bulk-type device would work in the embodiment designed for use with the optical waveguide 2, given the differing input geometries.

Moreover, at the emergent face of the optical waveguide 22 in Fig. 9, *divergent* light is emitted, travels through member 24a, and a parallel beam of light P2 is subsequently emitted. In Figure 16, however, the light-wavelength converting device 22 emits *convergent* light toward the wavelength selective mirror 61. As a consequence, if the light-wavelength converting device 22 of Fig. 16 is used in the embodiment of Fig. 9, there is no reasonable expectation that convergent light passing through member 24a would be emitted as parallel light P2 and the modification would ultimately render the embodiment of Fig. 9 inoperable.

Therefore, one skilled in the art would not have modified the embodiment of Fig. 9 with the bulk-type polarization inversion device of Fig. 16 due to the incompatible optical geometries of the laser light as inputted into and outputted from the respective wavelength conversion devices.

Also, as noted in the previous Amendment, the Yamamoto notes the reduction in conversion efficiency when using bulk-type polarization devices over optical waveguide-type devices. The reduction would be even greater if a narrowly focused beam is used in the bulk-type device. This reduction in conversion efficiency is yet another reason why one skilled in the art would not have a reasonable expectation of success in the modifying the embodiment of Fig. 9 with the bulk-type device of Fig. 16.

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Thus, for the above reasons, Applicant submits that it would not have been obvious to modify the embodiment shown in Fig. 9 with what is disclosed in Fig. 16 to render claims 1, 3, 19, and 30 unpatentable.

Claims 10-13, 15, 18, 21-29, 31-32, which depend from claim 1, and claim 34, which depends from claim 3, are patentable for at least the reasons submitted for their base claims.

Alternatively, or in addition, claim 34 is patentable because Yamamoto fails to teach, suggest, or provide motivation for wherein the laser beam enters a light wavelength conversion element formed of a bulk-shaped wavelength conversion crystal, as a converging beam and the laser beam is emitted from the light wavelength conversion element as a diverging beam. Rather, the light wavelength conversion element in Fig. 16 disclosed by Yamamoto emits a converging laser beam, not a diverging laser beam, as recited in the claim.

Alternatively, or in addition, Applicant submits that claim 15 is patentable because the references do not teach, suggest, or provide motivation for a *wavelength selecting optical element* that is a bulk grating. Although, the Examiner states that the light wavelength converting device 22 of Figure 19 resembles a bulk grating, Applicant submits that the use of two light wavelength converting devices 22 as the claimed light wavelength conversion element and as the claimed transmission type wavelength selecting optical element is an inoperable combination.

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Rejection of Claims 2-9, 16, 17, 20 and 33 Under § 103(a) Over Sonoda in view of Yamamoto

For reasons similar to those submitted for claims 1, 3, 19, and 30, Applicant submits that claims 2, 3, 5-7, 9, and 20 are patentable because there is no reasonable expectation of success in replacing the optical waveguide of Sonoda with the bulk-type devices of Yamamoto given the incompatible optical geometries and the reduction in conversion efficiencies.

Claims 4, 8, 33 which depend from claims 3, 7, and 2, respectively, are patentable for at least the reasons submitted for their base claims.

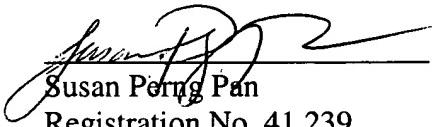
For reasons submitted for claim 34, claim 33 is patentable.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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